UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,782	02/24/2004	Jung Gwan Han	YHK-0132	2202

34610 7590 12/13/2007

KED & ASSOCIATES, LLP
P.O. Box 221200
Chantilly, VA 20153-1200

EXAMINER	
SHERMAN, STEPHEN G	
ART UNIT	PAPER NUMBER
2629	
MAIL DATE	DELIVERY MODE
12/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/784,782	HAN ET AL.	
	Examiner	Art Unit	
	Stephen G. Sherman	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16 and 19-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16 and 19-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 February 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed 16 November 2007. Claims 1-16 and 19-28 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-16 and 19-28 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 states that "the first driver and the second driver simultaneously supply a falling ramp waveform and a rising ramp waveform following the falling ramp waveform to either the scan electrode or the sustain electrode". The renders the claim indefinite because it is unclear as to whether the first driver supplies the waveform to the scan electrode or the sustain electrode and whether the second driver supplies the waveform

to the scan electrode or the sustain electrode, where in claim 2 it is clear that the first driver supplies the waveform to the scan electrode and the second driver supplies the waveform to the sustain electrode. Therefore, claim 3 cannot contain a limitation allowing the choice between supplying the waveform to the scan or sustain electrode.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1, 8, 9, 13, 16 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Figures 1-5 and Specification page 1, line 15 to page 6, line 14) in view of Fukushima et al. (US 6,232,935).

Regarding claim 1, AAPA disclose a plasma display having an address electrode, a scan electrode and a sustain electrode, wherein cells are arranged at intersections of the electrodes, comprising:

a first driver for initializing the cells (Figure 3 and page 3, lines 14-17, where if the cells are initialized by applying a reset waveform to the scan electrode, then there inherently is a driver for applying this waveform.);

a second driver (Page 5, lines 19-22 explain that during a sustain period a sustain pulse is alternately applied to the sustain and scan electrodes, where there is inherently a driver for applying pulses to the sustain electrodes.); and

an address driver to select on-cells and to select off-cells, wherein on-cells are selected by the address driver applying data of a first voltage to the address electrode and the first driver applying a scan pulse of a second voltage to the scan electrode (Figure 4, line 26 to page 5, line 1 explain that on cells are selected by applying a voltage to the address electrode and to the scan electrode, where there is inherently an address driver for applying the address voltages.), and

off-cells are selected by the address driver applying data of a third voltage to the address electrode and the first driver applying the scan pulse to the scan electrodes (Figure 5, lines 7-17 explain that off-cells are selected using zero volts while a scan pulse is applied.).

AAPA fails to teach wherein the third voltage is higher than the first voltage.

Fukushima et al. disclose wherein the voltage for selecting on-cells is a negative voltage while the voltage for a scan pulse is positive (Figure 10A, the address pulse applied for selecting ON cells is negative and the scan pulses are positive.).

Therefore, because both AAPA and Fukushima et al. teach methods of applying data pulses and scan pulses for driving a plasma display, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to substitute the positive data pulse and negative scan pulse method taught by AAPA into a negative data pulse and positive scan pulse method as taught by Fukushima et al. to achieve the predictable result of driving a plasma display, where the combination makes the voltage for selecting off-cells greater that the voltage for selecting on-cells.

Regarding claim 8, AAPA and Fukushima et al. disclose the plasma display of claim 1.

Fukushima et al. also disclose wherein the first driver and the second driver alternately apply a sustain pulse of a fourth voltage to the scan electrode and the sustain electrode to cause a sustain discharge with respect to the on-cells (Figure 10A shows sustain pulses 46a and 46b which are of a fourth voltage and alternately applied. These pulses would inherently be applied by a driver, which would be a sustain driver since it is applying the sustain pulses..).

Regarding claim 9, please refer to the rejection of claim 1, and furthermore Fukushima et al. also disclose wherein the second voltage is higher than the first

voltage (As explained above, the first voltage is a negative voltage, while the second voltage, i.e. scan voltage, is a positive value, meaning that the second voltage is higher than the first.).

Regarding claim 13, AAPA and Fukushima et al. disclose the method of claim 9. Fukushima et al. also disclose the method further comprising supplying a fourth voltage to the sustain electrode to select the on-cells and the off-cells, in an address period (Figure 10A shows that a voltage of zero is applied to the sustain electrodes XX1 in order to allow for the selection of cells during the address period.).

Regarding claim 16, this claim is rejected under the same rationale as claim 8.

Regarding claim 20, AAPA and Fukushima et al. disclose the method of claim 9. Fukushima et al. also disclose wherein the scan pulse of the second voltage to select on-cells is applied during an address period and the scan pulse to select off-cells is applied during the address period (Figure 10A shows that all of the scan pulses are applied during the address period, which means that the scan pulses that select ON and OFF cells will each be in the address period.).

Regarding claim 21, AAPA and Fukushima et al. disclose the method of claim 1. Fukushima et al. also disclose the method further comprising creating an address discharge within the selected on-cells when a subsequent sustain voltage is applied

during a sustain period (Figure 10A shows sustain pulses 46a and 46b which cause address discharge within on-cells.).

Regarding claim 22, AAPA and Fukushima et al. disclose the method of claim 21.

Fukushima et al. also disclose wherein creating the address discharge includes avoiding an address discharge within the selected off-cells during the sustain period (Column 7, lines 60-63. If a cell is off, address discharge will not occur.).

8. Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Figures 1-5 and Specification page 1, line 15 to page 6, line 14) in view of Fukushima et al. (US 6,232,935) and further in view of Du et al. (US 2003/0071577).

Regarding claim 2, AAPA and Fukushima et al. disclose the plasma display of claim 1.

AAPA and Fukushima et al. fail to teach wherein the first driver supplies a waveform to the scan electrode and the second driver applies an identical waveform to the sustain electrode sustain electrode.

Du et al. disclose wherein drivers of a plasma display supplies an identical waveform to both of the scan electrode and the sustain electrode (Figure 3 shows the reset period T1, in which PY1 is applied to the scan electrode Y and PX2 is applied to the sustain electrode X, where PY1 is identical to PX2.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to apply an identical waveform to both the sustain and scan electrodes as taught by Du et al. with the plasma display taught by the combination of AAPA and Fukushima et al. in order to provide a plasma display in which the distribution of wall charges in the pixel units in the reset period are made to be less different.

Regarding claim 10, this claim is rejected under the same rationale as claim 2.

9. Claims 3, 6, 11, 14 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Figures 1-5 and Specification page 1, line 15 to page 6, line 14) in view of Fukushima et al. (US 6,232,935) and further in view of Du et al. (US 2003/0071577) and Mizobata (US 2003/0095084).

Regarding claim 3, AAPA, Fukushima et al. and Du et al. disclose the plasma display of claim 2.

AAPA, Fukushima et al. and Du et al. fail to teach wherein the initializing driver simultaneously supplies a falling ramp waveform and a rising ramp waveform following the falling ramp waveform to the scan electrode and the sustain electrode.

Mizobata et al. disclose a plasma display wherein an initializing driver supplies a falling ramp waveform and a rising ramp waveform following the falling ramp waveform to the scan electrodes (Figure 3 shows that during period 7, there is a falling ramp

supplied to the electrodes S1 to Sm during period 2 and that there is a rising ramp supplied to the electrodes S1 to Sm following the falling ramp in period 3.).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to make the waveforms taught by the combination of AAPA, Fukushima et al. and Du et al. have the falling and rising ramp structure as taught by Mizobata et al. in order to improve the darkroom contrast ratio.

Regarding claim 6, AAPA, Fukushima et al., Du et al. and Mizobata et al. disclose the plasma display of claim 3.

Du et al. also discloses wherein the falling ramp waveform decreases from a first negative voltage to a second negative voltage, an absolute value of the second negative voltage being greater than an absolute value of the first negative voltage and wherein the rising ramp waveform increases from the first negative voltage to zero V (Figure 7 shows pulse PY2 applied to the scan electrode Y. In this waveform, the lowest voltage is the second voltage and the voltage at which the waveform begins to fall is the first voltage, making the second voltage larger than the first. Figure 7 also shows that the rising part of the waveform PY2 is from the second voltage to a ground potential.).

Regarding claim 11, this claim is rejected under the same rationale as claim 3.

Regarding claim 14, this claim is rejected under the same rationale as claim 6.

Regarding claim 25, this claim is rejected under the same rationale as claim 3.

Regarding claim 26, this claim is rejected under the same rationale as claim 3.

10. Claims 4-5, 12 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Figures 1-5 and Specification page 1, line 15 to page 6, line 14) in view of Fukushima et al. (US 6,232,935) and further in view of Mizobata (US 2003/0095084) and Kobayashi (US 6,876,340).

Regarding claim 4, AAPA and Fukushima et al. disclose the plasma display of claim 1.

AAPA and Fukushima et al. fail to teach wherein the initializing driver supplies a falling ramp waveform and a rising ramp waveform following the falling ramp waveform to the scan electrode, and the second driver supplies a fourth voltage to the sustain electrode.

Mizobata discloses a plasma display wherein an initializing driver supplies a falling ramp waveform and a rising ramp waveform following the falling ramp waveform to the scan electrodes (Figure 3 shows that during period 7, there is a falling ramp supplied to the electrodes S1 to Sm during period 2 and that there is a rising ramp supplied to the electrodes S1 to Sm following the falling ramp in period 3.), and supplies

a fourth voltage to the sustain electrode (Figure 3, lines C1-Cm receive a voltage during period 7.).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to make the waveforms taught by the combination of AAPA and Fukushima et al. have the falling and rising ramp structure as taught by Mizobata et al. in order to improve the darkroom contrast ratio.

AAPA, Fukushima et al. and Mizobata fail to teach wherein the fourth voltage is a negative voltage.

Kobayashi discloses a plasma display in which a negative voltage is applied to the sustain electrodes during a reset period (Figure 7, electrodes Y1-Yn have a voltage that goes below 0 applied, i.e. a negative voltage.).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use make the voltage applied to the sustain electrode as taught by the combination of AAPA, Fukushima et al. and Mizobata have a negative voltage as taught by Kobayashi in order to provide a plasma display in which the distribution of wall charges in the pixel units in the reset period are made to be less different.

Regarding claim 5, AAPA, Fukushima et al., Mizobata and Kobayashi disclose the plasma display of claim 4.

Kobayashi also discloses wherein the second driver comprises a sustain driver for supplying the fourth voltage to the sustain electrode in an address period to select

on-cells and the off-cells (Figure 7 shows the voltage being applied to the sustain electrode during the address period.).

Regarding claim 12, this claim is rejected under the same rationale as claim 4.

Regarding claim 27, this claim is rejected under the same rationale as claim 4.

Regarding claim 28, this claim is rejected under the same rationale as claim 4.

11. Claims 7, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Figures 1-5 and Specification page 1, line 15 to page 6, line 14) in view of Fukushima et al. (US 6,232,935) and further in view of Akiba (US 2003/0122742).

Regarding claim 7, AAPA and Fukushima et al. disclose the plasma display of claim 1.

AAPA and Fukushima et al. also disclose wherein the second voltage is a positive voltage (Figure 10A).

Fukushima et al. fail to teach wherein the first voltage to select the on-cells is any one of zero V and a ground voltage GND.

Akiba discloses wherein ground or zero volts is used to select on-cells in a plasma display (Paragraph [0067]).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the teachings of Akiba in the plasma display taught by the combination of Fukushima et al. in order to employ a different method of achieving the same results in which the advantage of lower power consumption can be attained.

Regarding claim 15, this claim is rejected under the same rational as claim 7.

Regarding claim 19, please refer to the rejection of claim 7, where the examiner understands that if the first voltage used to select on-cells is zero volts, then in combination with the other references, Figure 3 of AAPA shows that this is what is applied during the reset period as required by this claim.

12. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Figures 1-5 and Specification page 1, line 15 to page 6, line 14) in view of Fukushima et al. (US 6,232,935) and further in view of Higashino et al. (US 7,030,839).

Regarding claim 23, AAPA and Fukushima et al. disclose the method of claim 9.

AAPA and Fukushima et al. fail to teach of the method further comprising maintaining wall charges within the selected off-cells during a sustain period.

Higashino et al. disclose of a method in which the wall charges of the selected off-cells are maintained during a sustain period (Column 10, liens 27-43 explain that the

sustain voltage is maintained so that discharge only occurs in cells written, and not in off-cells meaning that the wall charges are not erased, but rather that the voltage applied is not enough to cause discharge.).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the teaching of Higashino et al. with the plasma display method taught by the combination of AAPA and Fukushima et al. in order to eliminate the occurrence of erroneous display illumination in the sustain period such that superior image quality is achieved.

Regarding claim 24, AAPA, Fukushima et al. and Higashino et al. disclose the method of claim 23.

Fukushima et al. also disclose wherein selecting the on-cells and selecting the off-cells occurs during an address period preceding the sustain period (Figure 10A shows that the selecting of On and OFF cells occurs during an address period which is before the sustain period.).

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

5 December 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER